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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,969	09/09/2003	Michal Hlavac	INGEENI-1	4000

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EXAMINER

HAJNIK, DANIEL F

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,969	HLAVAC ET AL.	
	Examiner	Art Unit	
	Daniel F. Hajnik	2628	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 1 and 2 have been amended.
2. Claims 7-10 have been added.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

These claims claimed a “virtual world” or a “virtual character” which are data structures per se. Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure’s functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure’s functionality to be realized, and is thus statutory.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roseborough et al. (US Patent 6141019, herein referred to as "Roseborough").

As per claim 1, Roseborough teaches the claimed limitations of:

1. A virtual world comprising:

a virtual environment;

a plurality of virtual elements within said virtual environment, each of said virtual elements being capable of interacting with other of said virtual elements within the virtual environment; and

user controls for enabling a user to interact with at least one of said virtual elements within said virtual environment;

By teaching of:

"Noted in FIG. 1, the major components of environments 22 include a virtual backdrop 106, static objects 108, and dynamic objects 110. Of course, other components may easily be envisioned and implemented for use in environments 22" (col 17, line 66 – col 18, line 3) and by teaching of "A synthetic creature 10 can play with a ball dynamic

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object 110 either on its own or with its user” (col 18, lines 43-45). Roseborough teaches one example of user controls by using a mouse (col 18, lines 46-49).

Roseborough teaches the claimed limitations of:

wherein at least one of said virtual elements comprises a virtual character comprising a behavior state, an emotion state and a learning state, and wherein said behavior state, said emotion state and said learning state are capable of changing in response to (i) interaction with other virtual elements within the virtual environment, and/or (ii) commands from said user input controls; and

By teaching of:

“Environments 22 are the particular physical and visual characteristics of surrounding space, including constraining surfaces such as floor and walls, distributed materials such as air and water ... into which a synthetic creature 10 may be placed” (col 17, lines 50-55). In addition, Roseborough teaches of “Behaviors 20 are how users ultimately perceive the composite activities of a synthetic creature 10. An example of a behavior 20 might be a synthetic creature 10 chasing a ball” (col 14, lines 50-52), states “a synthetic creature 10 with extensive learning capabilities” (col 15, line 8), states “personality preference variables” (col 16, line 13), and states “the independent behaviors 20 are used to control things such as ... emotional state” (col 16, lines 44-46).

Roseborough teaches the claimed limitations of:

wherein said virtual environment is configured so that additional virtual characters can be introduced into said virtual environment;

By teaching of:

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Similarly, a first synthetic creature 10 can interact with other synthetic creatures 10 in an environment 22.
(col 18, lines 48-49)

Roseborough does not explicitly teach the claimed limitations of:

wherein the additional virtual characters comprise a behavior state, an emotion state and a learning state, and wherein the behavior state, emotion state and learning state of the additional virtual characters are capable of changing in response to (i) interaction with other virtual elements within the virtual environment, and/or (ii) commands from said user input controls;

and further wherein the additional virtual characters are capable of being recognized by the virtual character previously existing within the virtual environment.

However, it would have been obvious to one of ordinary skill in the art to modify

Roseborough to perform the claimed limitation. Roseborough suggests these capabilities by teaching of:

Similarly, **a first synthetic creature 10 can interact with other synthetic creatures 10 in an environment 22. It should be noted that such multiple synthetic creature 10 interactions can be quite complex**, for example involving not only positional messaging such as that of the chase-ball scenario, but also audible interaction, like barking or meowing, and even other types (e.g., **odor interaction in a dog meets skunk scenario**)
(col 18, lines 48-55, some text bolded for clarity)

where complex interactions would suggest recognizing and using the behavior, emotion, and learning state. The use of behavior, emotion, and learning states in an additional virtual character are further suggested by Roseborough by teaching of:

In particular, a synthetic creature 10 with extensive learning capabilities will in all likelihood require the ability to add or remove behaviors 20 **to develop totally new behaviors 20 on its own (i.e., a form of learning)**.
(col 15, lines 7-11, some text bolded for clarity)

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and by teaching of:

All stimuli 62 are associated with a world position 68, **which identify where within the environment 22 they originate at run-time.**
(col 17, lines 27-29)

Here, the modification would be achieved by using the same learning, behavior, and emotion techniques for the additional character that are utilized by the first character. One advantage to such a modification is a simple and consist way of interaction among multiple characters in the virtual environment.

As per claim 9, the reasons and rationale for the rejection of claim 1 is incorporated herein.

Roseborough teaches the claimed limitations of:

wherein the virtual world further comprises an audio-visual component for displaying audio and visual manifestations of the virtual world to the user;

wherein the audio-visual component comprises an animation engine for driving the animated display of the virtual world and an audio engine for driving audio output for the virtual world;

and further wherein the audio-visual component is configured such that the audio engine may drive the animation engine

By teaching of "(e.g., visual and audible properties) of synthetic creatures" (col 2, lines 33-34) and by teaching of "Another object of the invention is to provide simulations which are are highly animated and have a truly interactive nature" (col 2, lines 45-47).

Roseborough further teaches the claimed limitations by teaching of:

Similarly, a first synthetic creature 10 can interact with other synthetic creatures 10 in an environment 22. It should be noted that such multiple synthetic creature 10 interactions can be quite complex, **for example**

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involving not only positional messaging such as that of the chase-ball scenario, but also audible interaction, like barking or meowing, and even other types (e.g., odor interaction in a dog meets skunk scenario)

(col 18, lines 48-55, some text bolded for clarity)

Roseborough does not explicitly teach the claimed limitations of:

wherein said virtual environment is configured so that additional virtual elements can be introduced into said virtual environment;

However, it would have been obvious to one of ordinary skill in the art to modify

Roseborough to perform the claimed limitations. Roseborough suggests these capabilities by teaching of:

For example, a virtual aquarium might be stocked with virtual fish synthetic creatures 10, **with the owner able to log onto a remote "pet store" on the Internet, to add to their collection or replace pets** who have "died" from old age or lack of owner interaction (i.e., virtual feeding and virtual affection).

(col 27, line 66 – col 28, line 4)(adding additional virtual character)

and further suggests the claimed limitation by teaching of:

since **environments 22** for synthetic creatures 10 **might become a commodity, purchased from vendors for authors to use or for users to play or work** with their synthetic creatures 10 in).

(col 26, line 66 - col 27, line 3)

Here, Roseborough can achieve the modification by further incorporating virtual elements into the list of available items to purchase. One of ordinary skill in the art can achieve the modification because purchasing virtual characters is a similar operations to purchasing or adding virtual elements. One advantage to adding the ability to purchase elements is that it adds to the overall functionality and capability of the system.

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As per claim 10, the reasons and rationale for the rejection of claim 1 is incorporated herein in regards to the claimed:

a virtual character comprising a behavior state, an emotion state and a learning state, and wherein said behavior state, said emotion state and said learning state of the camera are capable of changing in response to (i) interaction with other virtual elements within the virtual environment, and/or (ii) commands from said user input controls.

Roseborough further teaches the claimed limitations of:

The virtual world in accordance with claim 9 wherein the audio-visual component comprises at least one camera for determining a selected view of the virtual world

By teaching of:

Finally, the camera controls group 274 includes a view selection button matrix 316, which predictably controls orientation of an author's view of the synthetic creature 10 in the action editor screen 254.
(col 23, lines 27-30)

6. Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roseborough in view Hayes-Ruth et al. (US Patent 6031549, herein referred to as "Hayes-Ruth").

As per claim 2, the reasons and rationale for the rejection of claim 1 is incorporated herein. Roseborough does not explicitly teach the claimed limitations of:

wherein the behavior state is determined as a function of a plurality of different factors;

and further wherein the learning state incorporates a reinforcement learning mechanism which alters the relative weighting of the plurality of different factors used in

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determining the behavior state.

Hayes-Ruth teaches the claimed limitations by teaching of:

a corresponding weight for weighting the relative importance of the behavioral direction. The weights are used in determining desirability ratings of behaviors
(col 12, lines 15-19)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Roseborough and Hayes-Ruth. One advantage to the combination is taught by Hayes-Ruth, which teaches of:

Another object of the invention is to provide a system and method for selecting a behavior to be executed by a character **which enables the character to reflect context-dependent moods and other life-like qualities, such as normal variability, idiosyncrasies, and irregularities in behavior.** A further object of the invention is to provide a system and method for **directing an improvisational character which enables the character to follow directions which vary in the degree to which they constrain behavior**
(col 3, lines 27-36)

Thus Roseborough would benefit from the added behavior-simulated functionality of Hayes-Ruth.

As per claim 7, the reasons and rationale for the rejection of claim 1 is incorporated herein, in regards to the claimed virtual environment, virtual elements, user controls and behavior state, emotional state, and learning state.

The reasons and rationale for the rejection of claim 2 is incorporated herein, in regards to the claimed behavior state is determined as a function of a plurality of different factors and the claimed relative weighting.

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The reasons and rationale for the rejection of claim 7 is incorporated herein, in regards to the claimed "wherein said virtual environment is configured so that additional virtual elements can be introduced into said virtual environment".

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Roseborough and Hayes-Ruth for the same reasons as stated in claim 2.

As per claim 8, the reasons and rationale for the rejection of claims 1 and 7 are incorporated herein. Roseborough does not explicitly teach the claimed limitations of:

and further wherein each virtual character comprises a blackboard data structure which permits other virtual characters to access a subset of that virtual character's behavior state, emotion state and learning state, whereby to enhance the level of interaction between the characters

Hayes-Roth teaches the claimed limitations by teaching of:

Each character's **current interaction with the other character** is represented by an activity state
(col 14, lines 5-7)

and by teaching of:

Each agent application updates its run time representation of its character's activity state whenever it directs the character to execute a behavior and whenever it receives a perception message packet from the animator **indicating that the other character has executed a behavior**
(col 14, lines 16-21)

and by teaching of:

Any suitable **data structure for storing the specified events and their corresponding effects on the mood values** may be used in alternative embodiments
(col 11, lines 52-55)

Here, the blackboard data structure would be a data structure for updating run-time moods, behaviors, and interactions between characters. It would have been obvious to one of ordinary skill in the art at the time of invention to combine Roseborough and Hayes-Ruth for the same reasons as stated in claim 2.

As per claims 3-5, Roseborough teaches the claimed limitations of:

3. A virtual character according to claim 2 wherein said virtual character further comprises a sensory capability for sensing other virtual elements within said virtual environment
4. A virtual character according to claim 3 wherein said sensory capability is configured to sense the presence of other virtual elements within said virtual environment
5. A virtual character according to claim 3 wherein said sensory capability is configured to sense the motion of other virtual elements within said virtual environment

By teaching of:

"A synthetic creature 10 can play with a ball dynamic object 110 either on its own or with its user. It can nudge a ball into motion and chase it, running in front of and behind it as needed. Or it can chase a ball moved by a user" (col 18, lines 43-45). By having a synthetic character (virtual character) interact with a dynamic ball object, the character would have to have a sensory capability to detect the balls location and movement. In addition, Roseborough teaches other synthetic creatures can also be virtual elements which are sensed (col 18, lines 48-49). It would have been obvious to one of ordinary skill in the art at the time of invention to combine Roseborough and Hayes-Ruth for the same reasons as stated in claim 2.

As per claim 6, Roseborough teaches the claimed limitations of:

A virtual character according to claim 4 wherein said sensory capability is configured to sense a characteristic of other virtual elements within said virtual environment

By teaching of:

"Similarly, a first synthetic creature 10 can interact with other synthetic creatures 10 in an environment 22" (col 18, lines 48-49) and Roseborough teaches that these interactions can have many different characteristics such as audible interaction or odor (col 18, lines 49-55). It would have been obvious to one of ordinary skill in the art at the time of invention to combine Roseborough and Hayes-Ruth for the same reasons as stated in claim 2.

Response to Arguments

The objection to the title has been withdrawn in response to this amendment.

The objection to the drawings has been withdrawn in response to this amendment.

Applicant's arguments filed have been fully considered but they are not persuasive. Applicant makes arguments based upon claim limitations that were added to the claims at the same time the arguments were filed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel F. Hajnik whose telephone number is (571) 272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka J. Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



5/29/06

DFH



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